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## PATENT ABSTRACTS OF JAPAN

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(71)Applicant : B BAI B:KK

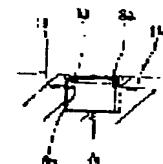
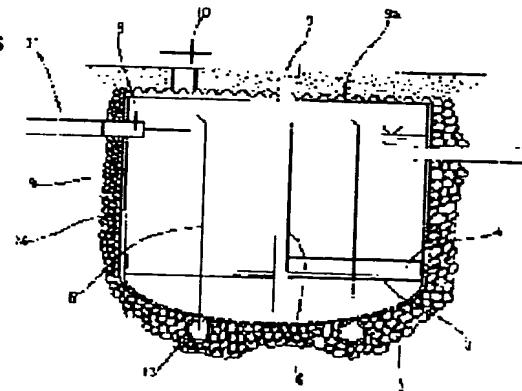
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(72)Inventor : TAKI YOSHIKI

## (54) UNDERGROUND TANK

## (57)Abstract:

PURPOSE: To provide an underground tank which is lightweight and easily constructed by a method wherein the outside of a tank main body which is formed into a basket form of a grid panel made of FRP is covered by a water barrier sheet, and the whole body is buried under the ground.



CONSTITUTION: When an underground tank is constituted as a septic tank, a tank main body is formed into a basket form of a grid panel made of FRP, and on a partitioning 3 on the bottom of the tank main body, a reinforcing member 4 made of wood, etc., is arranged. Also, a water-collecting pipe 5 is vertically provided, and is supported by the reinforcing member 4. The tank main body is covered by a water barrier sheet 9 which is a sheet of a material to shut off water, and made of a synthetic rubber, high density polyethylene or nylon, etc., and the top of the tank main body is covered by a separate water permeable sheet 9a. Such a tank main body is buried under the ground under a condition wherein the tank main body is covered by the water barrier sheet 9, and then, a manhole 10 is connected to the top of the tank main body, an inflow pipe 11a is connected to an inflow port 8a on the side, and a discharge pipe 11b is connected to a discharge port 8a respectively.

## LEGAL STATUS

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**CLAIMS**

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[Claim(s)]

[Claim 1] The underground tub characterized by covering with a liner sheet the outside of the tub body formed in the shape of a cage by the grid panel made from FRP, and coming to lay the whole underground underground.

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[Translation done.]

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**DETAILED DESCRIPTION**

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the underground tub which can be used as a depot or septic tanks, such as water and an oil.

[0002]

[Description of the Prior Art] That by which this kind of underground tub laid the tank made from the product made from concrete or FRP underground underground is known conventionally.

[0003] However, since these tubs became remarkable weight, there was a fault that conveyance and construction of a site were troublesome and cost also became high.

[0004]

[Objects of the Invention] While this invention cancels said fault, is lightweight and also being able to perform construction comfortably, it sets it as the purpose to offer the underground tub which can also reduce cost.

[0005]

[Means for Achieving the Goal] In order to attain said purpose, the underground tub concerning this invention covers with a liner sheet the outside of the tub body formed in the shape of a cage by the grid panel made from FRP, and is characterized by coming to lay the whole underground underground.

[0006]

[Function and Effect of the Invention] After laying closed conduit tubing for a predetermined hole at digging and its pars basilaris ossis occipitalis in a site, a sheet is developed on it. The tub body manufactured after that at works is hung, it takes down on a liner sheet, a tub body is covered with a liner sheet and a water penetration sheet, the joint of each sheet is pasted up and blocked, and a required piping activity is done. Then, the backfilling activity of soil is done, and a required supply is attached and it completes.

[0007] Since it compares with a concrete tub and an ERP tub, it is as under covering with a liner sheet and a permeable sheet, and manufacture is easy, conveyance is easy since it is lightweight, a liner sheet can be pasted up by adhesives or thermocompression bonding and the outside of the tub body which formed the underground tub concerning this invention in the shape of a cage by the grid panel made from FRP can be processed, the manufacture in works or manufacture in a site becomes easy. Therefore, construction also becomes simple and a large cost cut is possible for it.

[0008] Moreover, since AUW is about [ almost near the specific gravity of water ] 1.0, the above-mentioned underground tub is easy a foundation, and good.

[0009] Furthermore, since a tub body is rich in flexibility while the weight in a septic tank is distributed by the ground plane, a tub body carries out a cracking crack with earth pressure etc., and water does not leak.

[0010]

[Example] Drawing 1 shows the example which constituted the underground tub of this invention as a septic tank, and a sign 1 is a tub body. This tub body 1 is formed in the shape of a cage by the grid panel 2 made from FRP. What is necessary is just to form the configuration of the tub body 1 in a proper configuration like a cube type, a semi-cylindrical shape, and a cylindrical shape.

[0011] In addition, it is formed in one and, as for the flank and pars basilaris ossis occipitalis of the

tub body 1, lid 1a should just connect the thing of another object with the above-mentioned flank with a suitable connection means.

[0012] On the partition 3 of the pars basilaris ossis occipitalis of the tub body 1, the reinforcement member 4 which consists of wood etc. is arranged. Moreover, the catchment tubing 5 is formed perpendicularly and supported by the reinforcement member 4. The catchment tubing 5 is connected to the closed conduit tubing 13 laid under the lower part of the tub body 1. In a center section, the sludge drawn tube 6 made from a vinyl chloride is arranged, opening of the lower limit is carried out to an about 5cm part from a pars basilaris ossis occipitalis, and, as for the upper limit, the projection and the cap 7 are attached in the upper part of the tub body 1. Furthermore, input 8a and outlet 8b are attached in the upper part of the tub body 1.

[0013] Moreover, although not illustrated inside the tub body 1, it fills up with much contact internal insulation, such as spherical BIOS made of synthetic resin (trademark by Nichinan industrial incorporated company).

[0014] Next, the above-mentioned tub body 1 is covered with the liner sheet 9. A liner sheet 9 is a sheet of the quality of the material which intercepts water, and has quality-of-the-material things, such as synthetic rubber, a high density polyethylene en, and nylon. In addition, a liner sheet 9 covers a flank and a pars basilaris ossis occipitalis, and the upper part is covered by permeable sheet 9a. Since a liner sheet 9 or permeable sheet 9a can be pasted up and processed by adhesives or thermocompression bonding, the manufacture in works or manufacture in a site becomes easy, and it is easy to convey.

[0015] The above-mentioned tub body 1 is underground laid underground in the condition of having been covered with the liner sheet 9, a manhole 10 is established in the upper part of the tub body 1, inhalant canal 11a is connected to input 8a of a flank, and effluent pipe 11b is connected to outlet 8b.

[0016] Next, when constructing the above-mentioned septic tank, the tub body 1 and the member of the interior are manufactured beforehand at works. And drawing 3 (a) In a site, the closed conduit tubing 13 is first laid for the predetermined hole 12 at digging and its pars basilaris ossis occipitalis, and a liner sheet 9 is developed on it after \*\* (refer to this drawing (b)) so that it may be shown. This drawing (c) The piping activity which hangs and takes down the tub body 1 on a liner sheet 9 like, covers the tub body 1 with a liner sheet 9 and a water penetration sheet, pastes up and blocks the joint of each sheet, connects the closed conduit tubing 13 and the catchment tubing 5 further, and connects input 8a, inhalant canal 11a, outlet 8b, and an effluent pipe 11 is done. Then, while doing the backfilling activity of soil, the supply of manhole 10 grade is attached and it completes. In addition, since the tub itself is lightweight and it also becomes the cause which has a possibility of producing buoyancy, as a result increases earth pressure with storm sewage, springwater, etc., it is good for a periphery to arrange stones 14.

[0017] According to the above-mentioned septic tank, corruption water, such as a waste of a life, is made to flow in a septic tank from inhalant canal 11a, and the useful bacteria which disassemble pollutants from a manhole 10 are thrown in. Since the septic tank is covered with the liner sheet 9, corruption water does not begin to leak out of a septic tank. Thereby, biodegradation of the corruption underwater pollutants is carried out with useful bacteria, and corruption water is purified and is discharged from an effluent pipe 11. Although what is hard to be decomposed serves as sludge and is stored by the pars basilaris ossis occipitalis, it can put the hose of a vacuum car into the sludge drawn tube 6 periodically, and can draw out and remove sludge.

[0018] since [ in addition, ] there is no generating of an odor when a BSK bacillus (it \*\*\*\*s as Fermentation Research Institute \*\*\*\* No. 9643) is used as useful bacteria -- rinsing of toilets, such as transit camp after purification, -- it is reusable as service water.

[0019] Moreover, since the upper part of a septic tank is covered by permeable sheet 9a and a soil bacillus is supplied with this when the gas which occurs inside a septic tank is discharged and storm sewage permeates, biodegradation is accelerated.

[0020] Although only the septic tank wrapped in the liner sheet 9 tends to be compressed by earth pressure, that the basket ingredient made from ERP has sufficient reinforcement, that it is elastic, that the reinforcement member 4 is formed, when there is water pressure in the contact internal insulation with which the interior was filled up, and a tub, it has sufficient pressure resistance. In

relation to this, subterranean water, such as springwater, is incorporated in a septic tank through the catchment tubing 5 from the closed conduit tubing 13, and the pressure in a tub increases also with these water. In addition, it can use also for the water cycle in a septic tank by drawing in a tub the catchment depended closed conduit tubing 13.

[0021] as mentioned above , the manufacture in manufacture [ in / since it be as under covering in a liner sheet 9 and permeable sheet 9a about the outside of the tub body 1 formed in the shape of a cage by the grid panel 2 made from FRP when say the above-mentioned septic tank simply , manufacture be easy , and it compare with a concrete tub and ERP tub , conveyance be easy since it be lightweight , a liner sheet 9 can be paste up by adhesives or thermocompression bonding and it can be process / works ] , or a site become easy . Therefore, construction also becomes simple and a large cost cut is possible for it.

[0022] Moreover, since AUW is about [ almost near the specific gravity of water ] 1.0, a foundation is easy and it is good.

[0023] Furthermore, since the tub body 1 is rich in flexibility while the weight in a septic tank is distributed by the ground plane, the tub body 1 carries out a cracking crack with earth pressure etc., and water does not leak.

[0024] In addition, the above-mentioned underground tub can be used for the reservoir of water, an oil, etc. in addition to the application used as a septic tank. In this case, it is desirable to cover all tub bodies with a liner sheet. Moreover, what is necessary is just to constitute piping suitably according to the application.

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## © EPODOC / EPO

PN - JP8034487 A 19960206  
 TI - UNDERGROUND TANK  
 FI - B65D88/76 ; B65D90/06&Z  
 PA - B BAI B KK  
 IN - TAKI YOSHIKI  
 AP - JP19940192943 19940725  
 PR - JP19940192943 19940725  
 DT - I

## © WPI / DERWENT

AN - 1996-146701 [15]  
 TI - Underground tank - has outside of tank main body covered with grid panel made of fibre reinforced plastic formed like basket with impermeable sheet and buried whole  
 AB - J08034487 The tank (1) is buried underground whole. The outside of the tank main body covered with a grid panel (2). The grid panel is made of fibre reinforced plastic. The grid panel is shaped like a basket with an impermeable sheet ( 9 ).  
 - USE/ADVANTAGE - For storage tank or purification tank of liq. e.g. oil, water. Reduces cost by easing construction. Provides light tank.  
 - (Dwg. 1/3)  
 IW - UNDERGROUND TANK TANK MAIN BODY COVER GRID PANEL MADE FIBRE REINFORCED PLASTIC FORMING BASKET IMPERMEABLE SHEET BURY WHOLE  
 PN - JP8034487 A 19960206 DW199615 B65D90/06 004pp  
 IC - B65D88/76 ;B65D90/06  
 DC - Q34  
 PA - (BBYB-N) B BY B KK  
 AP - JP19940192943 19940725  
 PR - JP19940192943 19940725

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PN - JP8034487 A 19960206  
 TI - UNDERGROUND TANK  
 AB - PURPOSE:To provide an underground tank which is lightweight and easily constructed by a method wherein the outside of a tank main body which is formed into a basket form of a grid panel made of FRP is covered by a water barrier sheet, and the whole body is buried under the ground.  
 - CONSTITUTION:When an underground tank is constituted as a septic tank, a tank main body is formed into a basket form of a grid panel made of FRP, and on a partitioning 3 on the bottom of the tank main body, a reinforcing member 4 made of wood, etc., is arranged. Also, a water-collecting pipe 5 is vertically provided, and is supported by the reinforcing member 4. The tank main body is covered by a water barrier sheet 9 which is a sheet of a material to shut off water, and made of a synthetic rubber, high density polyethylene or nylon, etc., and the top of the tank main body is covered by a separate water permeable sheet 9a. Such a tank main body is buried under the ground under a condition wherein the tank main body is covered by the water barrier sheet 9, and then, a manhole 10 is connected to the top of the tank main body, an inflow pipe 11a is connected to an inflow port 8a on the side, and a discharge pipe 11b is connected to a discharge port 8a respectively.  
 I - B65D90/06 ;B65D88/76  
 PA - B BAI B:KK

JP8034487

IN - TAKI YOSHIKI  
ABD- 19960628  
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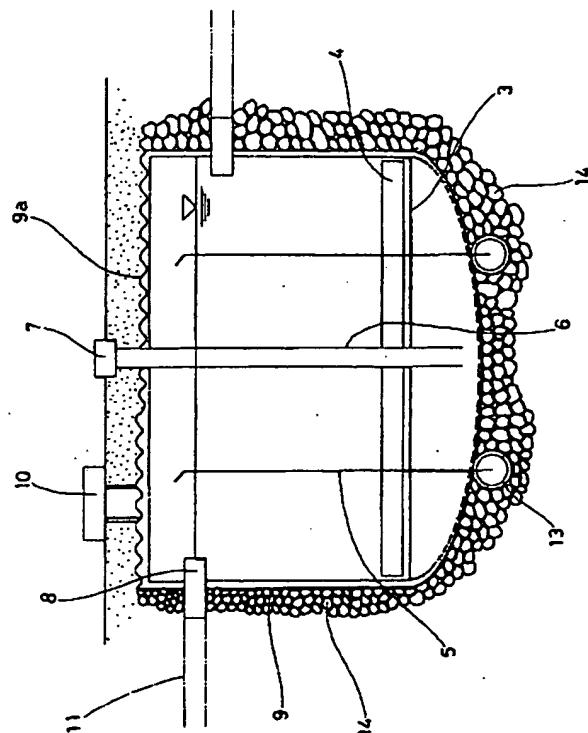
(74)代理人 弁理士 瀬川 幹夫

(54)【発明の名称】 地下槽

(57)【要約】

【目的】軽量で、工事も楽に行なうことができるとともに、コストも削減できる地下槽

【構成】FRP製の格子パネル2により筒状に形成した槽本体1の外側を遮水シート9で被覆し、全体を地下に埋設した。



1

## 【特許請求の範囲】

【請求項1】 F R P 製の格子パネルにより籠状に形成した槽本体の外側を遮水シートで被覆し、全体を地下に埋設してなることを特徴とする地下槽。

## 【発明の詳細な説明】

## 【0001】

【産業上の利用分野】 本発明は水、油等の貯留槽あるいは浄化槽として利用できる地下槽に関する。

## 【0002】

【従来技術】 従来この種の地下槽は、コンクリート製又はF R P 製の槽体を地下に埋設したものが知られている。

【0003】 しかし、これらの槽はかなりの重量になるので、運搬や現場の工事が面倒であり、またコストも高くなるという欠点があった。

## 【0004】

【発明の目的】 本発明は前記欠点を解消し、軽量で、工事も楽に行なうことができるとともに、コストも削減できる地下槽を提供することをその目的とする。

## 【0005】

【目的を達成するための手段】 前記目的を達成するため、本発明に係る地下槽は、F R P 製の格子パネルにより籠状に形成した槽本体の外側を遮水シートで被覆し、全体を地下に埋設してなることを特徴とする。

## 【0006】

【発明の作用、効果】 現場において所定の穴を掘削、その底部に暗渠管を敷設した後、その上にシートを展開する。その後工場で製作した槽本体を吊下げる遮水シート上に降ろし、遮水シートと透水シートで槽本体を被覆し、各シートの合わせ目を接着して封鎖し、必要な配管作業を行なう。その後、土の埋め戻し作業をし、必要な備品を取り付けて完了する。

【0007】 本発明に係る地下槽は、F R P 製の格子パネルにより籠状に形成した槽本体の外側を遮水シートと透水性シートで被覆下だけのものであり、製作が簡単であり、コンクリート槽、E R P 槽に比し、軽量なため運搬が簡単であり、遮水シートは接着剤又は熱圧着によって接着、加工できるため、工場における製作又は現場での製作が容易になる。したがって、工事も簡便となり、大幅なコストダウンが可能である。

【0008】 また、上記地下槽は総重量がほぼ水の比重に近い1.0程度であるため、基礎が簡単でよい。

【0009】 さらに、浄化槽内の重量が接地面に分散されるとともに、槽本体が柔軟性に富むため、槽本体が土圧等によりヒビ割れして漏水することがない。

## 【0010】

【実施例】 図1は本発明の地下槽を浄化槽として構成した例を示すもので、符号1は槽本体である。この槽本体1はF R P 製の格子パネル2により籠状に形成されてい  
z 槽本体1の形状  
z 地下槽の形状  
z 半円筒形、四筒形等のよう

2

に、適宜の形状に形成すればよい。

【0011】 なお、槽本体1の側部と底部とは一体に形成され、蓋1aは別体のものを適当な連結手段によって上記側部に連結すればよい。

【0012】 槽本体1の底部の仕切り3の上には木材などからなる補強部材4が配置されている。また、集水管5が垂直に設けられて補強部材4に支持されている。集水管5は槽本体1の下部に埋設された暗渠管13に接続されている。中央部には塩化ビニル製の汚泥引き抜き管6が配置され、その下端は底部から5cm程度の部位に開口し、その上端は槽本体1の上部に突出し、キャップ7が取り付けられている。さらに、槽本体1の上部には流入口8aと放流口8bが取り付けられている。

【0013】 また、槽本体1の内部には図示しないが、合成樹脂製の球状のバイオス（日南産業株式会社製の商標）等の接触炉材が多数充填されている。

【0014】 次に、上記槽本体1は遮水シート9によって被覆されている。遮水シート9は水を遮断する材質のシートで、合成ゴム、高密度ポリエチレン、ナイロン等の材質ものがある。なお、遮水シート9は側部と底部を覆い、上部は透水性シート9aで覆われている。遮水シート9又は透水性シート9aは接着剤又は熱圧着によって接着、加工できるため、工場における製作又は現場での製作が容易になり、また輸送が容易である。

【0015】 上記槽本体1は遮水シート9で被覆された状態で地下に埋設され、槽本体1の上部にはマンホール10が設けられ、側部の流入口8aには流入管11aが、放流口8bには放流管11bが接続されている。

【0016】 次に、上記浄化槽を施工する場合は、槽本体1とその内部の部材は予め工場で製作しておく。そして、図3(a)に示されるように、まず現場において所定の穴12を掘削、その底部に暗渠管13を敷設し（同図(b)参照）た後、その上に遮水シート9を展開する。同図(c)のように遮水シート9上に槽本体1を吊り降ろし、遮水シート9と透水シートで槽本体1を被覆し、各シートの合わせ目を接着して封鎖し、さらに暗渠管13と集水管5とを接続し、流入口8aと流入管11a、放流口8bと放流管11bとを接続する配管作業を行なう。その後、土の埋め戻し作業を行なうとともに、マンホール10等の備品を取り付けて完了する。なお、槽自体が軽量のため、雨水や湧水等により、浮力を生じる恐れがあり、ひいては土圧を増す原因にもなるから、周辺部には蝶14を配置するのがよい。

【0017】 上記浄化槽によれば、流入管11aから浄化槽内に生活の雑排水などの汚濁水を流入させ、マンホール10から汚濁物質を分解する有用細菌を投入する。浄化槽は遮水シート9に覆われているので、汚濁水は浄化槽外に漏れ出すことはない。これにより、汚濁水中の汚濁物質は有用細菌により生分解され、汚濁水は浄化されて放流管11から放流される。分解されにくいものは

汚泥となって底部に貯留されるが、定期的にバキュームカーのホースを汚泥引き抜き管6に入れて汚泥を引抜き除去することができる。

【0018】なお、有用細菌としてB SK菌（微研第9643号として寄託）を利用すると、臭気の発生がないため、浄化後キャンプ地等のトイレの水洗用水として再利用することができる。

【0019】また、浄化槽の上部は透水性シート9aで覆われているので、浄化槽内部で発生するガスが排出され、また雨水が浸透するときにこれと共に土壌菌が補給されるため、生分解が加速される。

【0020】遮水シート9で包んだだけの浄化槽は、土圧により圧縮される傾向があるが、E R P製のカゴ材料が十分な強度をもつこと、弾力性があること、補強部材4が設けられていること、内部に充填された接触炉材と槽内の水圧があることなどにより十分な耐圧強度を有する。これに関連し、湧水などの地中の水が暗渠管13から集水管5を経て浄化槽内に取り込まれ、これらの水によっても槽内の圧力が増す。なお、暗渠管13による集水を槽内に導くことによって、浄化槽内の水循環にも利用できる。

【0021】上述のように、上記浄化槽は簡単に言えばF R P製の格子パネル2により筐状に形成した槽本体1の外側を遮水シート9と透水性シート9aで被覆下だけ

のものであり、製作が簡単であり、コンクリート槽、E R P槽に比し、軽量なため運搬が簡単であり、遮水シート9は接着剤又は熱圧着によって接着、加工できるため、工場における製作又は現場での製作が容易になる。したがって、工事も簡便となり、大幅なコストダウンが可能である。

【0022】また、総重量がほぼ水の比重に近い1.0程度であるため、基礎が簡単でよい。

【0023】さらに、浄化槽内の重量が接地面に分散されるとともに、槽本体1が柔軟性に富むため、槽本体1が土圧等によりヒビ割れして漏水することがない。

【0024】なお、上記地下槽は、浄化槽として用いる用途以外には、水や油等の貯留に用いることができる。この場合、槽本体を全て遮水シートで被覆するのが好ましい。また、配管はその用途に従って適宜構成すればよい。

#### 【図面の簡単な説明】

【図1】本発明に係る地下槽の断面図

【図2】槽本体1の斜視図

【図3】(a)～(e)は上記地下槽の施工手順の説明図

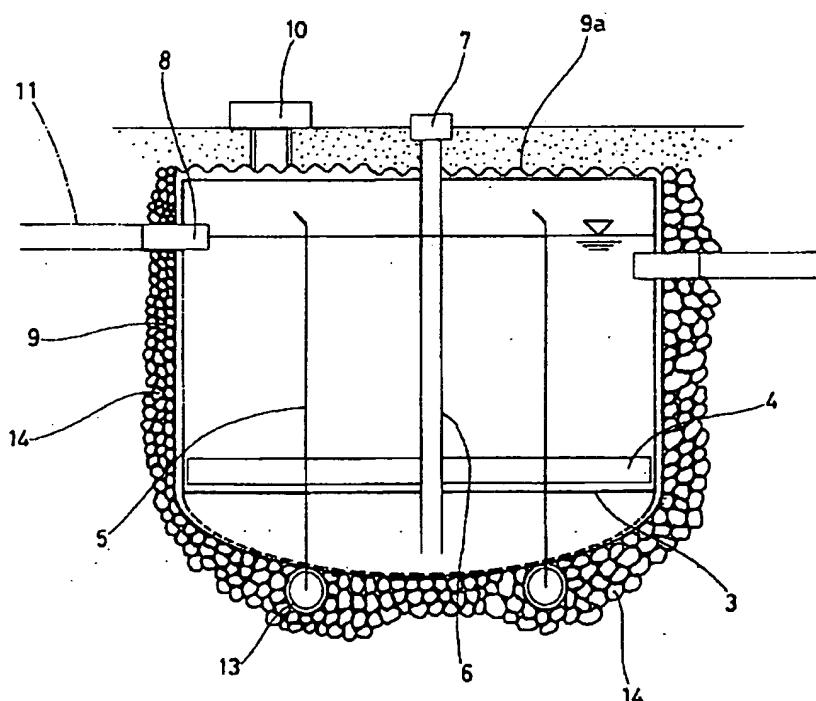
#### 【符号の説明】

1 槽本体

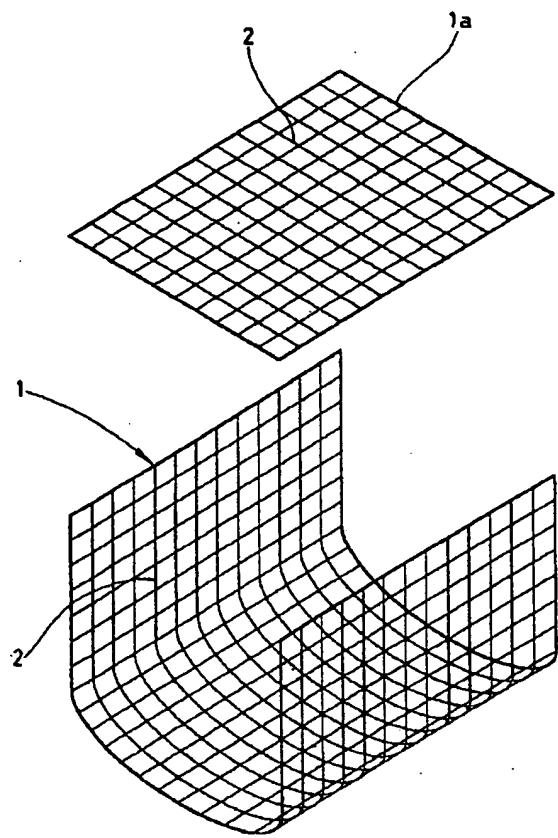
2 格子パネル

9 遮水シート

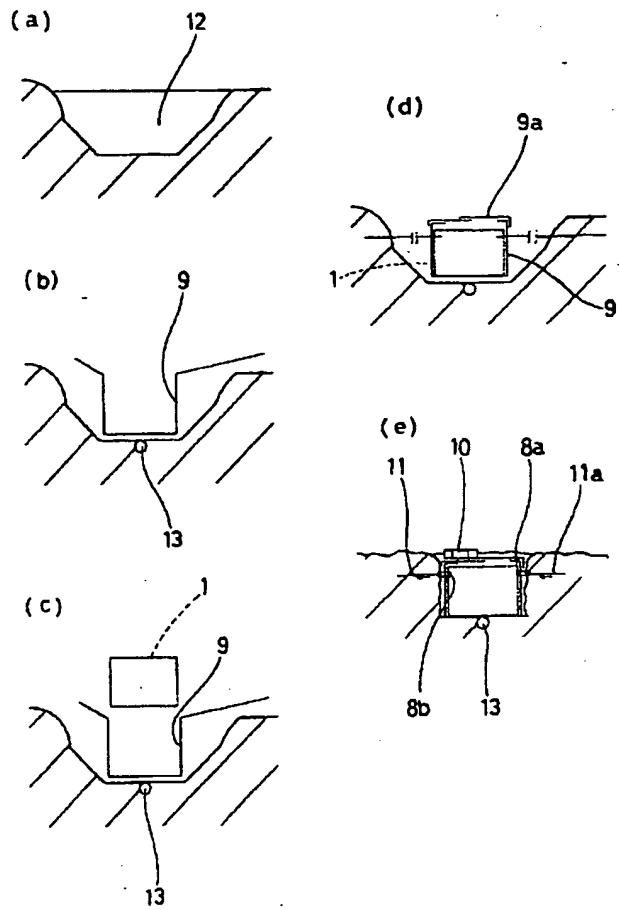
【図1】



【図2】



【図3】



# PATENT ABSTRACTS OF JAPAN

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(71)Applicant : KUBOTA CORP

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(72)Inventor : SANADA FUMIO

IWAHASHI MASANOBU

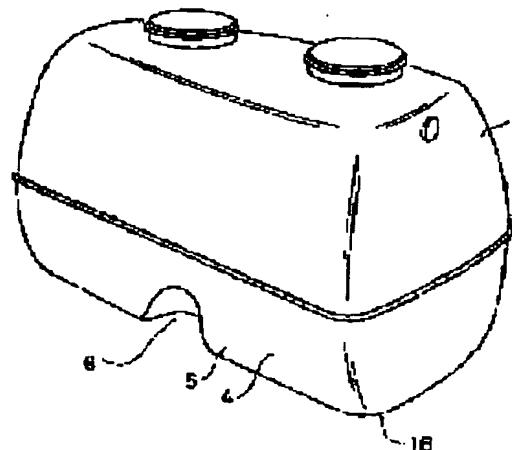
TSUJIKAWA HISATO

## (54) SEPTIC TANK

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To thin the wall of an approximately rectangular septic tank made from FRP, so as to make the tank lightweight, by providing rounded recesses on both sides while leaving a flat part behind at the center of the bottom surface of the tank, for reducing stresses applied to the corners of the bottom.

**SOLUTION:** A septic tank 1 made from FRP and having an approximately rectangular shape on a projected plan shape has a rounded recess 6 formed in the center of its curved corner part 5 rising from its bottom surface 1B and leading to a side face 4. The recesses 6 are formed on both sides while leaving the flat part of the bottom surface 1B behind, with the depth and width of each recess made as large as possible. The recesses 6 may be provided in plural portions of the septic tank 1. Therefore, stresses generated at the corners of the bottom can be reduced by reinforcing the bottom of the septic tank 1 where earth pressure is highest, without impeding flow along the bottom of the septic tank 1. Therefore, the tank wall can be thinned for weight reduction. Also, the recess 6 of the septic tank 1 can be used as a hooking part for a hanging rope or the like for safe transportation and construction work.



## LEGAL STATUS

[Date of request for examination]

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[Date of requesting appeal against examiner's decision of rejection]

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2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

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**CLAIMS**

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[Claim(s)]

[Claim 1] The septic tank to which a plane projection configuration is characterized by forming in a proper place roundish [ wore on the curve corner section which starts from nothing and a base and reaches a side face in the shape of an abbreviation rectangle ] in the septic tank formed by FRP.

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[Translation done.]

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**DETAILED DESCRIPTION****[Detailed Description of the Invention]****[0001]**

**[Field of the Invention]** This invention relates to reinforcement of the tank of a septic tank about a septic tank.

**[0002]**

**[Description of the Prior Art]** Since being laid underground among soil is common as for septic tanks, such as a small union processing septic tank, it is common to consider as the product made from FRP which used the glass fiber mat etc. as the strengthening heart from the request on chemical resistance and reinforcement.

**[0003]** By the way, into these septic tanks, when the sanitary sewage and treated water are flood condition, it is satisfactory, but if it will be in a water reducing condition, as shown in drawing 5, bending will arise so that earth pressure P may act on the tank of a septic tank 1 and it may illustrate exaggeratedly, and big bending stress will arise in pars-basilaris-ossis-occipitalis corner section 1A.

**[0004]** It is ideal to make \*\*\*\*\* of the bottom of the tank section spherical or cylindrical, for lessening such bending stress, and by doing so, thickness of a tank wall can also be made thin and lightweight-ization of the whole tub can also be attained.

**[0005]**

**[Problem(s) to be Solved by the Invention]** However, it is [ being / of a tub / a miniaturization, purification being / of the sanitary sewage / a function, and ] more desirable for the flat-surface projection configuration of the tank of a septic tank to make the shape of a rectangle from the field of geometrical stability further.

**[0006]** for this reason, the conventional septic tank 1 shows to drawing 6 -- as -- corrugated one for reinforcement to a tank wall -- 2 was prepared and forming a reinforcing rib 3 in a tank wall inside, or thickening thickness t of a tank wall, and maintaining reinforcement was performed.

**[0007]** however, corrugated one -- the configuration of a tank becoming complicated when preparing 2, and forming a reinforcing rib 3 is connected with aggravation of a process condition, and it has the problem to which all require time and effort for shaping.

**[0008]** The weight of a tub increasing very much and having un-arranged -- raw material cost also starts -- while there is no fault [ like the former ] that whose thickness of a tank wall is thickened it is. furthermore, corrugated one -- the case where 2 and a reinforcing rib 3 are formed -- bottom of the tank 1B -- corrugated one -- since it is divided with 2 or a rib 3, the stream of a bottom of the tank 1B part bars -- having -- the flow of treated water -- abnormalities -- being generated -- that effect arises in purification effectiveness \*\*\* -- corrugated one -- the problem that sludge might carry out precipitate deposition was also in the standup base of 2 or a rib 3.

**[0009]** This invention is made for the purpose of canceling the above-mentioned trouble, and it is made for the purpose of giving reinforcement and offering the good septic tank of sanitary-sewage distributivity, without thickening a tank wall for the body of a septic tank.

**[0010]**

**[Means for Solving the Problem]** That is, the septic tank of this invention is characterized by forming in a proper place roundish [ wore the plane projection configuration on the curve corner section which starts from nothing and a base and reaches a side face in the shape of an abbreviation rectangle ] in the septic tank formed by FRP.

[0011]

[Embodiment of the Invention] Next, the gestalt of implementation of this invention is explained. Drawing 1 is [ the bottom view of a septic tank and drawing 3 of the perspective view of the septic tank of this invention and drawing 2 ] the A-A line important section sectional views of drawing 2.

[0012] In the septic tank formed by FRP, the septic tank 1 of this invention forms in tub 1 center section roundish [ wore the plane projection configuration on the curve corner section 5 which starts from nothing and base 1B, and reaches a side face 4 in the shape of an abbreviation rectangle / 6 and 6 ], and is constituted.

[0013] In addition, among the above-mentioned hollows 6 and 6, as shown in drawing 3, it is formed so that the flat part 7 of base 1B may remain, and in the limitation, depth d of a hollow 6 and width of face b ( drawing 2 ) are enlarged as much as possible.

[0014] Although the case where a hollow 6 was established in one place of the pars-basilaris-ossis-occipitalis side face of a septic tank 1 was shown as a gestalt of the above-mentioned implementation, as shown in drawing 4, you may prepare in two or more places. In the above, the bottom of the tank section which becomes [ earth pressure ] the highest is reinforced by the hollow 6, and, as for a septic tank 1, generating stress of the pars-basilaris-ossis-occipitalis corner of a septic tank is made small.

[0015] Therefore, the tank wall of the part septic tank can be made thin, and it is lightweight-ized. Furthermore, since the hollow 6 was established in the both sides of base 1B and has left the flat part 7 to the center section, a stream is not barred in the part and it does not have the effect on purification effectiveness.

[0016] Moreover, since a hollow 6 is deep, it serves as the hook sections, such as a hanging cord (illustration abbreviation) which carries a septic tank 1, and can be carried safely.

[0017]

[Effect of the Invention] Since this invention is constituted as mentioned above, a septic tank pars basilaris ossis occipitalis is reinforced by the hollow, and generating of the stress by earth pressure is made small.

[0018] Therefore, thickness of the tank wall of a septic tank can be made thin, and lightweight-ization of the part septic tank can be attained. Moreover, since a septic tank pars basilaris ossis occipitalis is crossed, and it is not fabricated, but leaves the pars-basilaris-ossis-occipitalis flat-surface section and is fabricated, the flow in alignment with a septic tank pars basilaris ossis occipitalis is secured, and a hollow is excellent also in sanitary-sewage purification effectiveness.

[0019] Furthermore, since a hollow also serves as the connection section of the hanging cord of a septic tank, it has conveyance of a septic tank, and the effectiveness that it can install, and can sometimes etc. hang using this and conveyance construction can also be carried out to insurance.

[Translation done.]

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PN - JP10204982 A 19980804  
 TI - SEPTIC TANK  
 FI - E03F11/00  
 PA - KUBOTA KK  
 IN - IWAHASHI MASANOBU; SANADA FUMIO; TSUJIKAWA HISATO  
 AP - JP19970009040 19970122  
 PR - JP19970009040 19970122  
 DT - I

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AN - 1998-477513 [41]  
 TI - Fibre reinforced plastic sewage purification tank - has stress reducing concave portion formed at the base  
 AB - J10204982 The tank is rectangle shaped and has a curved corner portion ( 5), formed at the side (4) of its bottom (1B). A concave portion (6) is formed at the centre of the base portion of the bottom of the tank.  
 - USE - In sewage treatment.  
 -  
 - ADVANTAGE - Excels in sewage purification efficiency. Reduces stress generation due to ground pressure. Enables safe transportation.  
 - (Dwg. 1/6)  
 IW - FIBRE REINFORCED PLASTIC SEWAGE PURIFICATION TANK STRESS REDUCE CONCAVE PORTION FORMING BASE  
 PN - JP10204982 A 19980804 DW199841 E03F11/00 004pp  
 IC - E03F11/00  
 MC - D04-B11  
 DC - D15 Q42  
 PA - (KUBI ) KUBOTA CORP  
 AP - JP19970009040 19970122  
 PR - JP19970009040 19970122

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PN - JP10204982 A 19980804  
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 AB - PROBLEM TO BE SOLVED: To thin the wall of an approximately rectangular septic tank made from FRP, so as to make the tank lightweight, by providing rounded recesses on both sides while leaving a flat part behind at the center of the bottom surface of the tank, for reducing stresses applied to the corners of the bottom.  
 - SOLUTION: A septic tank 1 made from FRP and having an approximately rectangular shape on a projected plan shape has a rounded recess 6 formed in the center of its curved corner part 5 rising from its bottom surface 1B and leading to a side face 4. The recesses 6 are formed on both sides while leaving the flat part of the bottom surface 1B behind, with the depth and width of each recess made as large as possible. The recesses 6 may be provided in plural portions of the septic tank 1. Therefore, stresses generated at the corners of the bottom can be reduced by reinforcing the bottom of the septic tank 1 where earth pressure is highest, without impeding flow along the bottom of the septic tank 1. Therefore, the tank wall can be thinned for weight reduction. Also, the recess 6 of the septic tank 1 can be used as a hooking part for a hanging rope or the like for safe transportation and construction work.

I - E03F11/00  
PA - KUBOTA CORP  
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ABD - 19981130  
ABV - 199813  
AP - JP19970009040 19970122

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